

Fig.1

Periodic test-object orientation on the microscope stage.

- 1. is the microscope frame(field of view);
- 2. are the diffraction grating strip images.

The arrow at the top of the frame indicates the line scan direction.

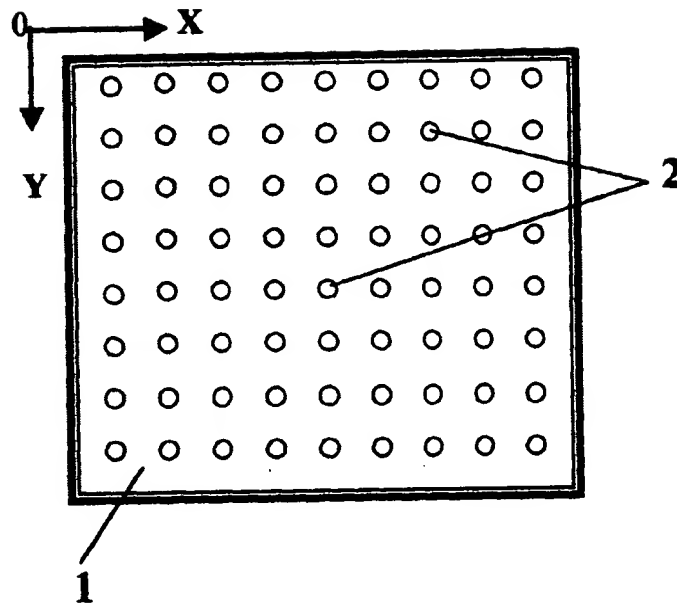


Fig.2

Two-dimensional array of signal values.

- 1. is the microscope field of view;
- 2. are the individual signal values at places with coordinates X and Y.

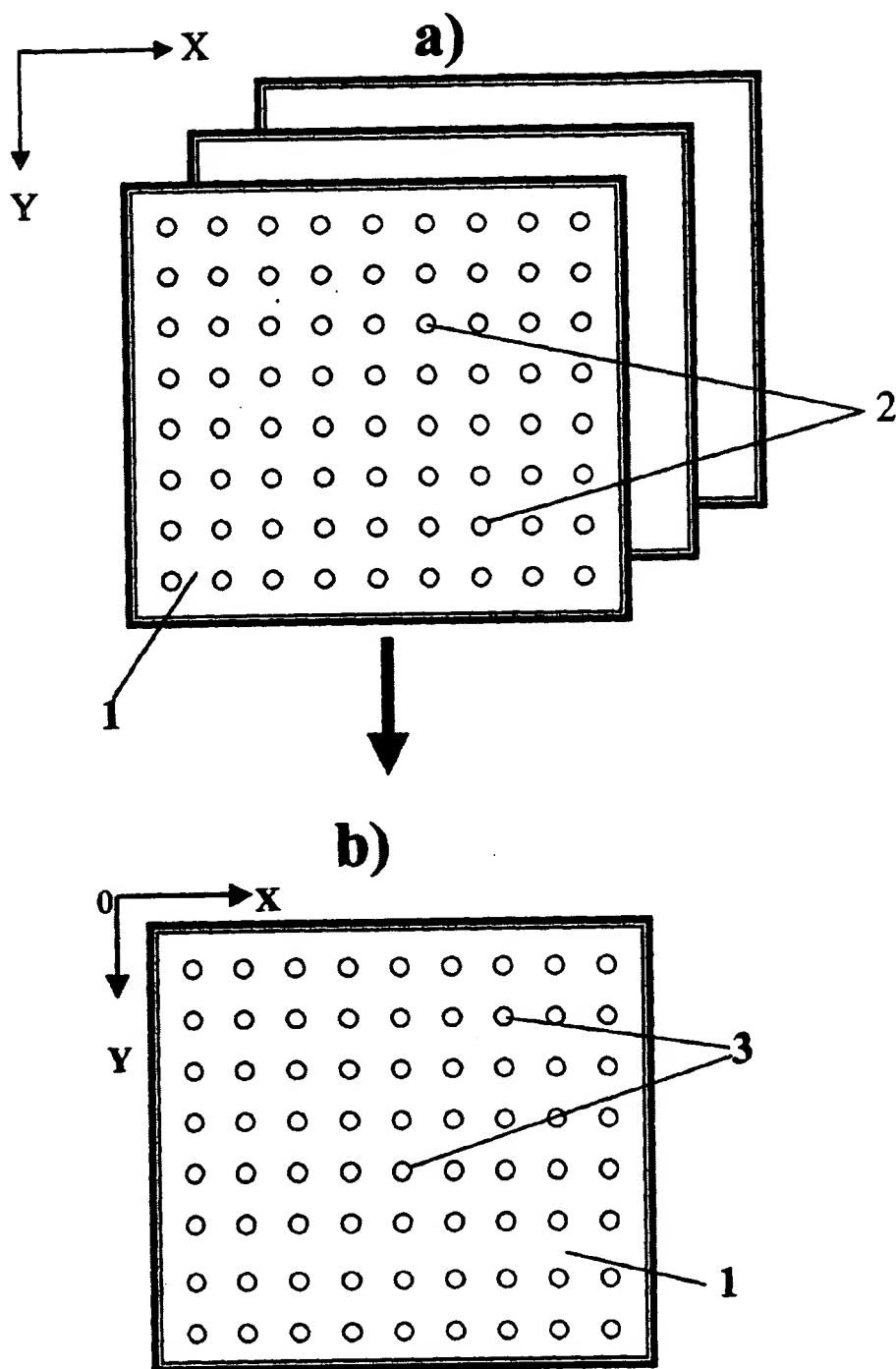


Fig.3
The procedure of arrays averaging.

- a) is the set of initial two-dimensional signal arrays;
b) is the averaged two-dimensional signal array;
1. is the microscope field of view; 2. are the signal values in the initial two-dimensional arrays; 3. is the signal values in the averaged two-dimensional array.

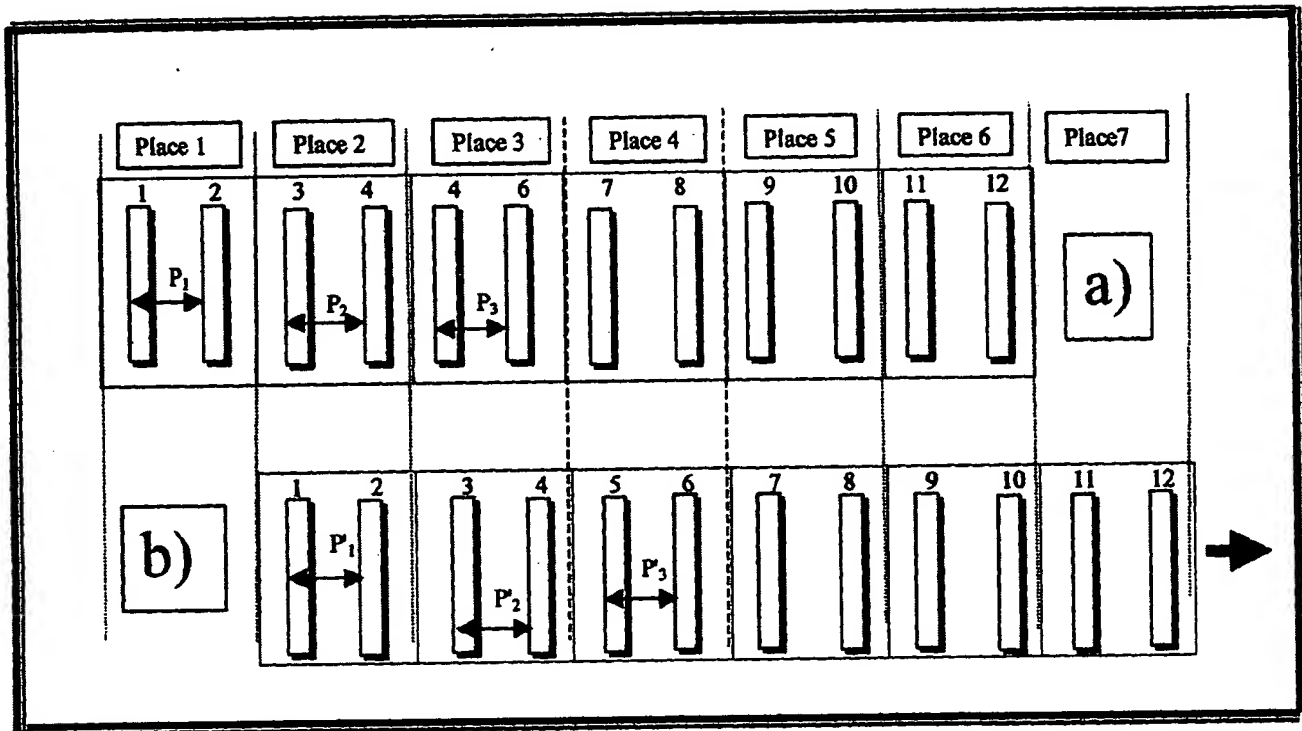


Fig.4

Shift of the diffraction grating image in the microscope field of view
according to Claim 1.e.

Row a) is the initial grating image; row b) is the image of shifted grating.
The arrow at bottom right indicates the shift direction.

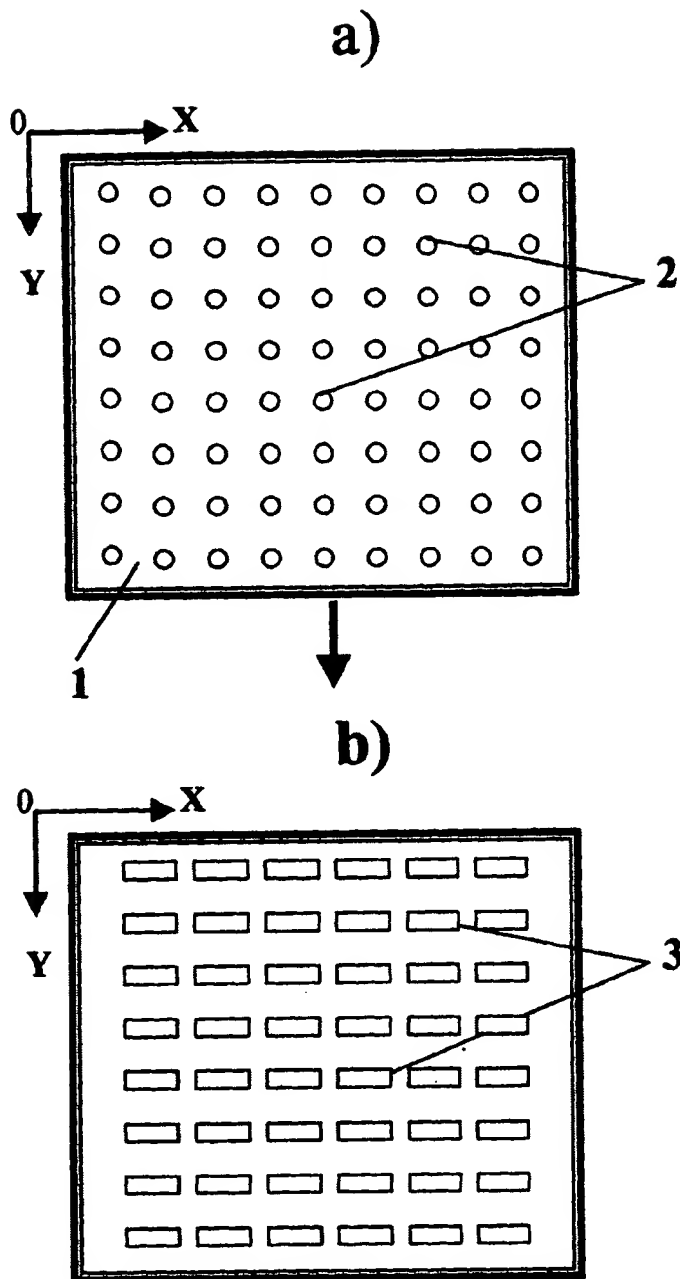


Fig.5

Transformation of two-dimensional individual signal values array (a) into two-dimensional individual pitch values array (b).

1. is the microscope field of view;
 2. are the individual signal values; 3. are the individual pitch values.

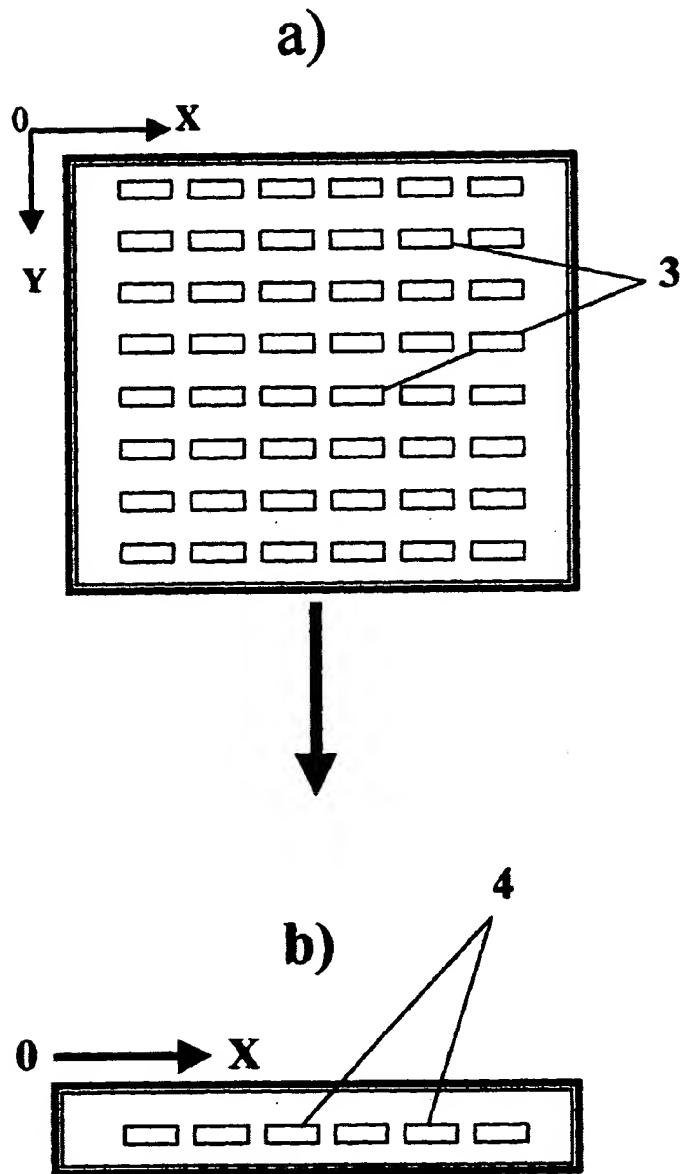


Fig.6

Transformation of the two-dimensional individual pitch values array (a) into one-dimensional mean pitch values profile (b).

- 3. are the individual pitch values;
- 4. is the mean pitch values profile obtained by averaging of individual pitch values along Y-direction.

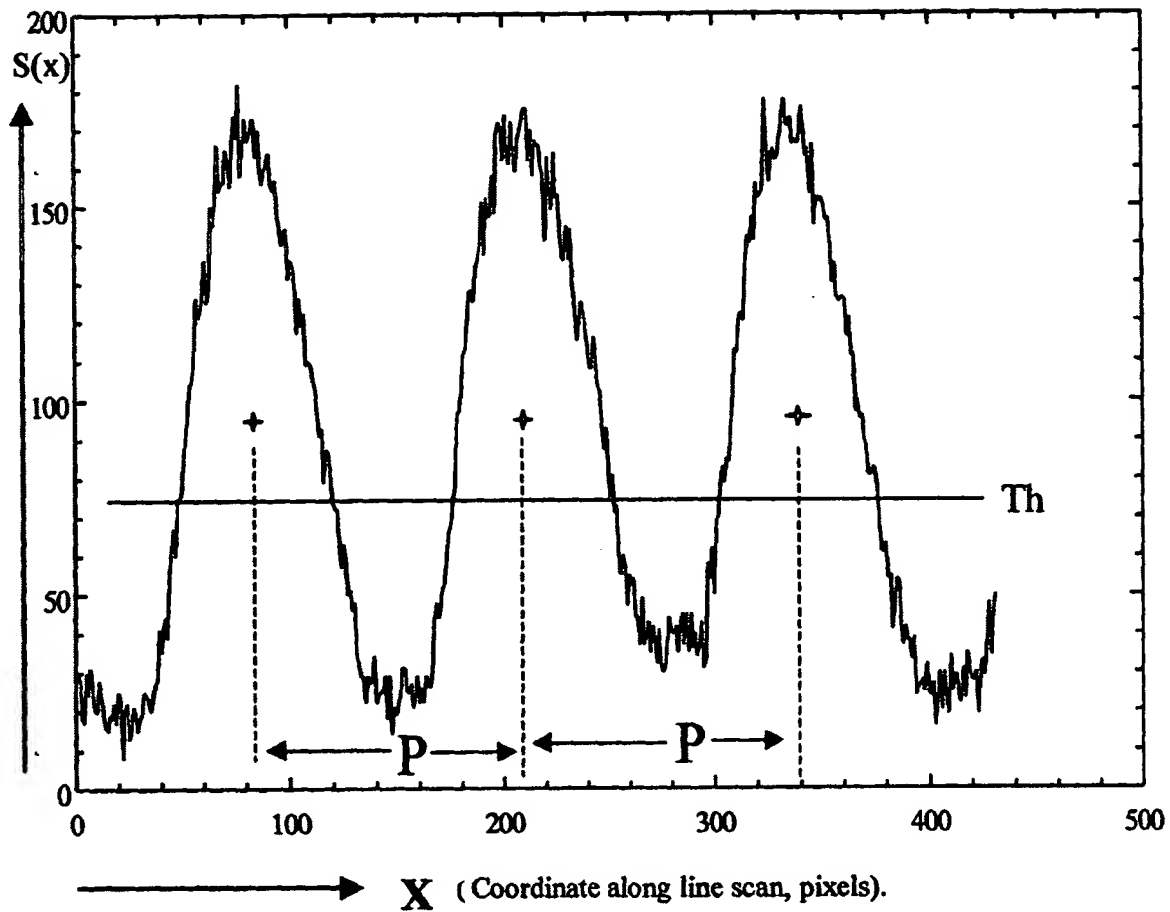


Fig.7

Signal cutting off by threshold (Th).

The solid curve represents the dependence of video-signal $S(x)$ plotted against coordinate X along line scan.

The sign $+$ indicates the position of the Centres of mass of signal "islands".

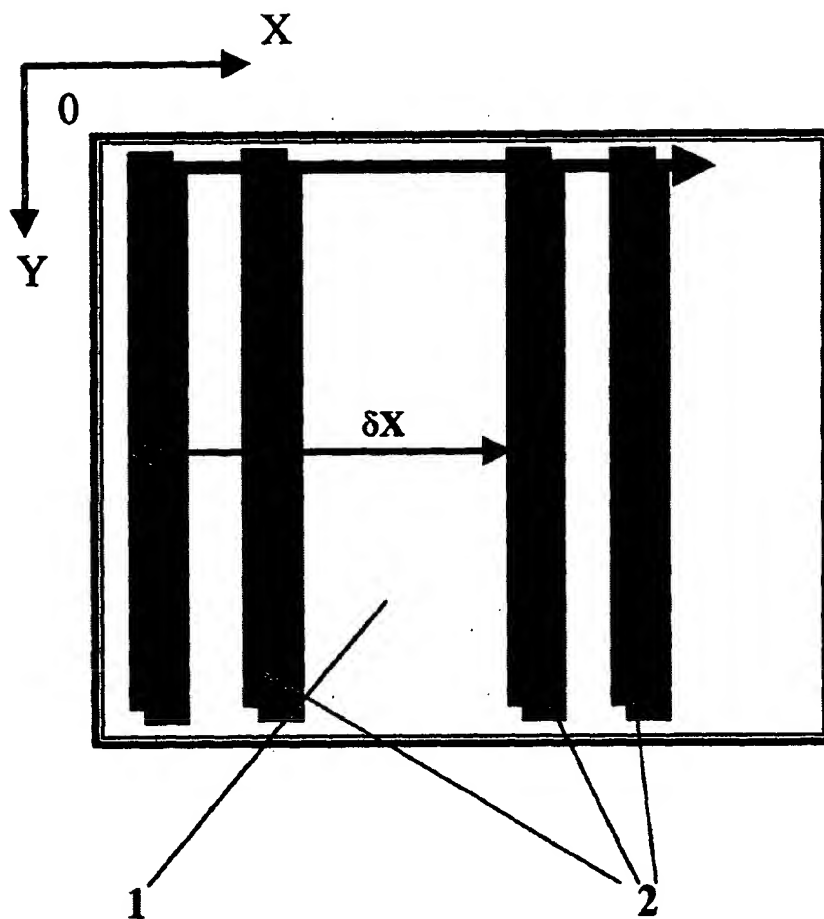


Fig.8

**Shift of the strip pair across microscope field of view
according to Claim 7.**

The arrow at the top of frame indicates the shift direction; the arrow
at the frame middle indicates the shift magnitude δX .

1 is the microscope frame(field of view);
2 are the test-object strips images.

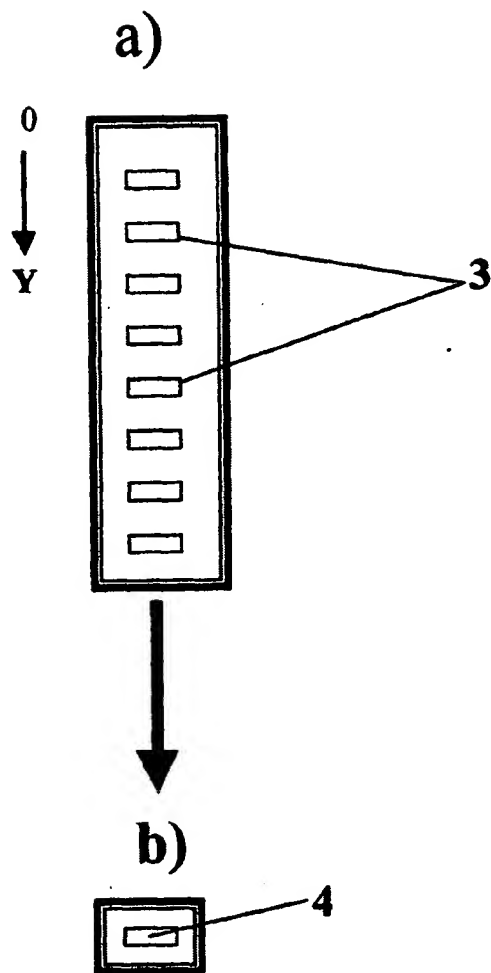


Fig.9

Transformation of the one-dimensional individual pitch values array (a) into mean pitch value (b) according to Claims 5d and 5h.

3. are the individual pitch values versus coordinate Y; 4. is the mean pitch value obtained by averaging of individual pitch values along Y-direction.

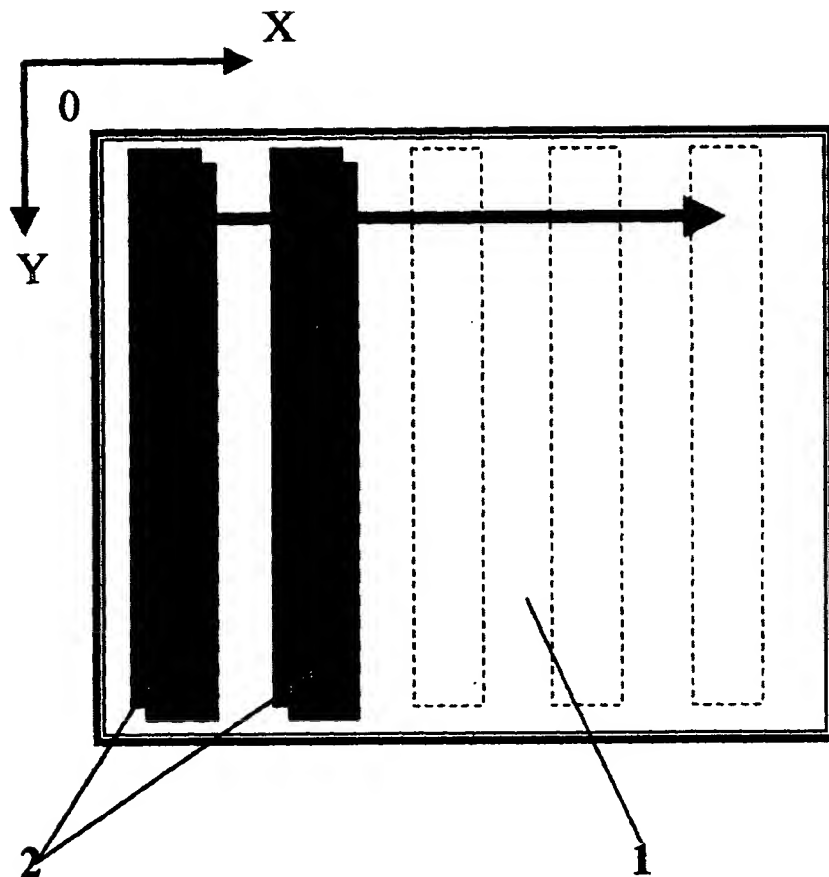


Fig.10

Test-object geometry according Claim 7 and its orientation on the microscope stage.

1 is the microscope frame (field of view);
2 are the test-object strips images.
The arrow at top of the frame indicates the line scan direction.

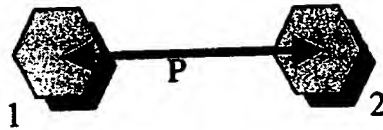


Fig.11

Geometry of the test-object according Claim 10.

P is the distance between features 1 and 2 i.e. pitch value.

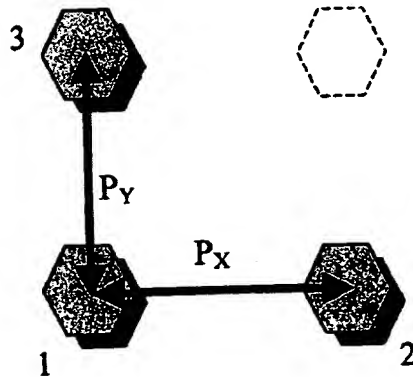


Fig.12

Geometry of the test-object according Claim 11.

P_X is the distance between features 1 and 2 i.e. the pitch value along X-axis;
 P_Y is the distance between features 1 and 3 i.e. the pitch value along Y-axis.

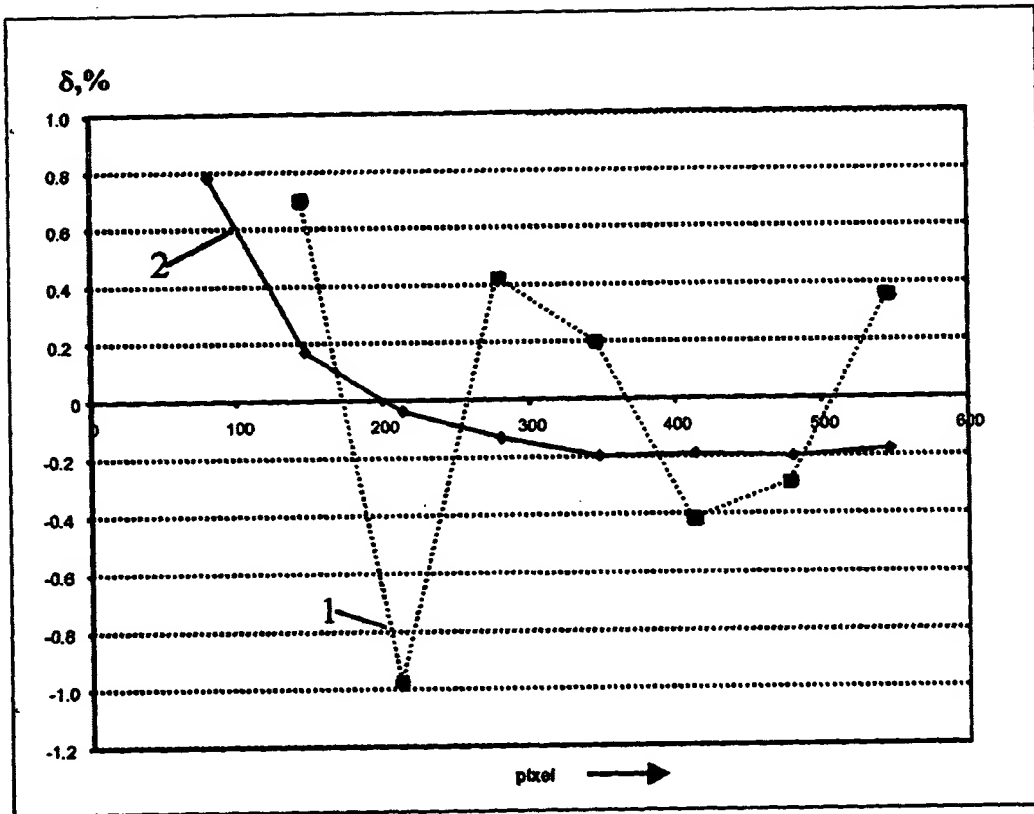


Fig.13.

The comparison of apparent (1) and true (2) scan non-linearity of the attested SEM. The δ (percents) plotted along Y is showing how much real local magnification differs from average one.

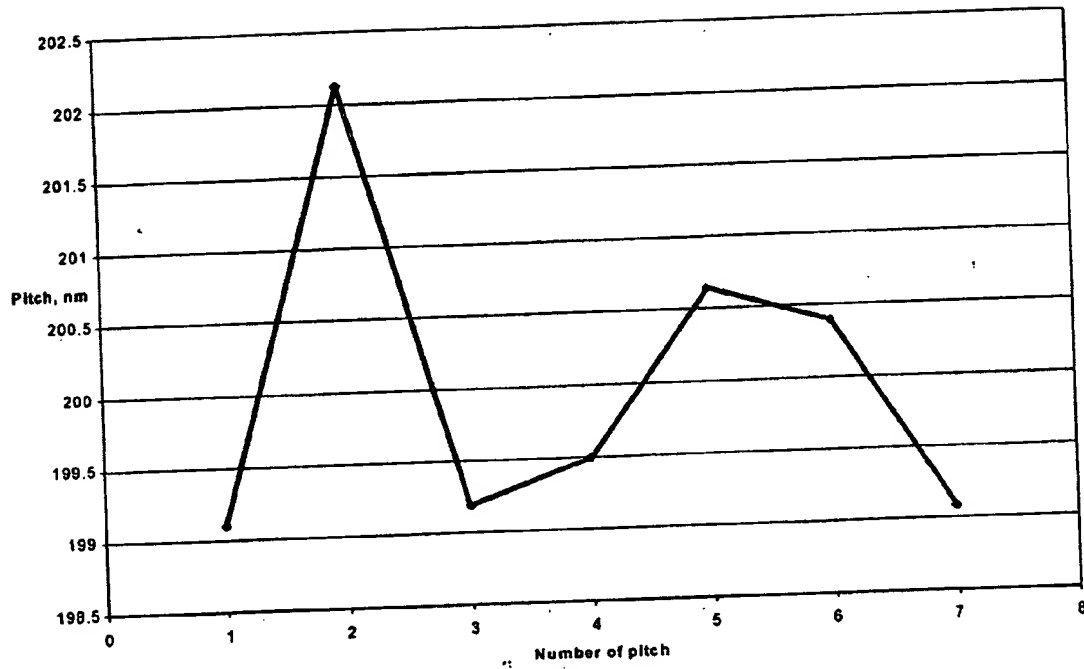


Fig.14.
The Sample non-uniformity